SEREBRENNIKOV, V.V.; POPOVA, V.T.

Periodic number of rare earth element selenites of the cerium group
as related to their solubility. Izv. vys. ucheb. zav.; Fiz. no.1:
173-174 '58.   (MIRA 11:6)

1.Tomskiy gosuniversitete imeni V.V. Kuybysheva.
          (Solubility) (Rare earth selenites)

5(2)
AUTHORS: Serebrennikov, V. V., Ivanova, Ye. I., Alekseyenko, L. A.

TITLE: On the Compounds of Cerium Salts With Pyridine and Quinoline
             (O soyedineniyakh soley tseriya s piridinom i khinolinom)

ABSTRACT: The interaction between cerium trichloride, cerium sulphate
             and pyridine and quinoline was investigated as well as the
             thermal resistance of these compounds and in the case of
             storage over sulphuric acid of different concentration. The
             stability of the hexathiocyanogen chromiate of cerium hexa-
             pyridine $[CePy_6][Cr(CNS)_6]$ and that of the hexathiocyanogen
             chromiate of cerium hexaquinoline $[Cequin_6].[Cr(CNS)_6]$ were
             investigated. The production of the initial compounds was
             described in the experimental part, i.e. the production of
             cerium (III)-chloride of anhydrous cerium sulphate $Ce_2(SO_4)_3$,
             of pyridine, and quinoline and $[CePy_6][Cr(CNS)_6]$ and
             $[Cequin_6][CrCNS)_6]$. Cerium chloride reacts with vaporous

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On the Compounds of Cerium Salts With Pyridine and   SOV/78-4-6-27/44
Quinoline

pyridine and quinoline under formation of compounds of
different composition. Complexes with 3,7, and 10 molecules
pyridine are formed in the case of a gradual reaction of cerium
chloride and pyridine. The course of the interaction of
cerium (III)-chloride with vaporous pyridine and quinoline is
given in figure 1. Cerium sulphate does not react with vaporous
pyridine and quinoline in the temperature range of -15 - +20°.
The stability of the pyridine- and quinoline compounds of
cerium is investigated. The experiments for the thermal dissocia-
tion of these compounds were carried out in a special apparatus
which is depicted. The pyridine loss of the compound $CeCl_3 \cdot 5.26Py$

under a pressure of 11.5 torr at 21, 50, and 110° is given in
figure 3. The pyridine loss of $CeCl_3 \cdot 5.26Py$ at 50° under a

pressure of 460, 163, and 11.5 torr is given in figure 4. The
pyridine loss of the compounds $CeCl_3 \cdot 7.85Py$ and $CeCl_3 \cdot 9.69Py$

in the case of storage over sulphuric acid of 44 and 84% is
given in figure 5. The thermal stability of the compounds

Card 2/3 $[CePy_6][Cr(CNS)_6]$ and $[Cequin]_6 \cdot [Cr(CNS)_6]$ was investigated in

On the Compounds of Cerium Salts With Pyridine and   SOV/79-4-6-27/44
Quinoline

        the case of a change of pressure and temperature and is given
in figure 6. The separation of the heterogeneous amine of the
above mentioned compounds during the storage over sulphuric
acid of 50 and 95% was investigated. The course of the curves
at 60 and 100° shows that the pyridine- and quinoline complexes
have different thermal stabilities. The increase of the anion
charge removes the bonding strength between cerium and pyridine
in the complexes. There are 7 figures and 3 references, 1 of
which is Soviet.

SUBMITTED: March 25, 1958

Card 3/3

5(4)   SOV/78-4-6-28/44

AUTHORS: Alekseyenko, L. A., Lemenkova, A. F., Serebrennikov, V. V.

TITLE: On the Loss of the Crystal Water in Sulphates of the Elements
             of Rare Earths of the Cerium Group (O potere kristallizatsion-
             noy vody sul'fatami redkozemel'nykh elementov tseriyevoy
             gruppy)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 6,
             pp 1382 - 1385 (USSR)

ABSTRACT: The thermographic and thermogravimetric curves of the octa-
             hydrate sulphates of lanthanum, cerium, praseodymium, neo-
             dymium, and samarium were plotted in the temperature range of
             20 - 270° (Figs 1 and 2). It was found that the separation
             of the first four and six molecules water increases with the
             reduction of the ionic radii of the rare earths elements. The
             temperatures at which four, six, and eight molecules water
             of the octahydrate sulphates of the rare earths elements of
             the cerium group are separated are given in table 2. From the
             thermographic and thermogravimetric investigations it is con-
Card 1/2   cluded that the dehydration process in the octahydrate

On the Loss of the Crystal Water in Sulphates   SOV/78-4-6-28/44
of the Elements of Rare Earths of the Cerium Group

       sulphates of the rare earths elements proceeds very slowly
       and that the separation of the crystallization water has a
       zeolitic character. There are 2 figures, 2 tables, and 3
       references, 1 of which is Soviet.

SUBMITTED: March 25, 1958

Card 2/2

SOV/78-4-6-35/44

5(4) 5(2)
AUTHORS: Serebrennikov, V. V., Votinova, N. P.

TITLE: The Solubility of Iodine in Iodide Solutions of the Rare Earths
Elements (Rastvoreniye yoda v rastvorakh yodidov redkozemel'nykh
elementov)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 6,
pp 1428 - 1430 (USSR)

ABSTRACT: The solubility of iodine in iodide solutions of lanthanum,
cerium, praseodymium, neodymium, and samarium was determined.
The optical density in the isomolar solutions of the iodides
of the rare earth elements was measured according to the method
of Ostromyslenkiy-Job, and the existence of the polyiodides
of lanthanum and cerium was detected. The investigation results
of the solubility of iodine in the iodide solutions of lanthanum
and cerium at 20° are given in table 1. The solubility of
iodine in 0.17 and 0.34 mol iodide solution of the rare earth
elements of the cerite group is given in table 2. The results
show that the solubility of iodide rises in the iodide solutions
of lanthanum and cerium with the increase of the iodide con-
centration. The data of table 2 show that the solubility of

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The Solubility of Iodine in Iodide Solutions of   SOV/78-4-6-35/44
the Rare Earths Elements

iodine is reduced with the reduction of the ionic radius of
the rare earth elements. The solubility of iodine increases
with the rise of temperature. The solubility of iodine in
solutions of lanthanum and cerium increases with the rise of
their concentration under formation of polyiodides. The compo-
sition of the polyiodides was determined. The composition- and
the optical diagram of the systems CeJ_3-J_2 and LaJ_3-J_2 are

given in figures 1 and 2. Both diagrams show a maximum
optical density in the case of the following ratio of the
components: $MeJ_3:J_2 = 1:9$. The polyiodides $Me(J_7)_3$ were detected

in lanthanum and cerium. There are 2 figures, 2 tables, and
5 references, 4 of which are Soviet.

SUBMITTED: March 25, 1958

Card 2/2

ALEKSEYENKO, L.A.; SAPRINA, G.G.; SEREBRENNIKOV, V.V.

Complex formation in aqueous systems rare earth iodide - iodine. Zhur. neorg. khim. 5 no. 12:2824-2826 D '60.

(MIRA 13:12)

(Rare earth iodides)   (Iodine)

CHUPAKHINA, R.A.; SKORIK, N.A.; SEREBRENNIKOV, V.V.

Separation of rare earth elements on ion-exchange resins by means of complex compounds of Trilon B and heavy metals. Izv.Sib.otd.AN SSSR no.9:101-106 '60.

(MIRA 13:11)

(Rare earths)   (Ion exchange)
          (Complex compounds)

SEREBRENNIKOV, Viktor Vasil'yevich; ALEKSEYENKO, L.A., dotsent, kand.
khim. nauk, red.; MORDOVINA, L.G., tekhn. red.

[Chemistry of rare earth elements (scandium, yttrium, lanthanides)
in two volumes, four books] Khimiia redkozemel'nykh elementov (skandii,
ittrii, lantanidy) v dvukh tomakh, chetyrekh knigakh. Pod red. L.A.
Alekseenko. Tomsk, Izd-vo Tomskogo univ. Vol.2. Books 2-4 [Distribu-
tion in nature, technology, separation methods, and analytic chemistry
of rare earth metals] Rasprostranenie v prirode, tekhnologiia, metody
razdeleniia i analitichekaia khimiia redkozemel'nykh elementov. 1961.
800 p.   (MIRA 14:11)
                        (Rare earth metals)

SEREBRENNIKOV, V.V.; GORELOV, I.P.

Effect of rare earth ions on the absorption spectrum of iodine
in aqueous solutions. Izv.vys.ucheb.zav.; fiz. no.4:175-176 '61.
(MIRA 14:10)

1. Tomskiy gosudarstvennyy universitet imeni V.V.Kuybysheva.
(Iodine—Spectra)   (Rare earths)

S/078/62/007/012/005/022
B144/B180

AUTHORS: Chupakhina, R. A., Serebrennikov, V. V.

TITLE: Complex amino cations of rare-earth elements

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 12, 1962, 2699-2701

TEXT: Coordination compounds were synthesized from lanthanide (Ln) nitrates, nicotinic acid (I), and $K_3[Cr(CNS)_6] \cdot 4H_2O$ (II). 0.6 g RE nitrate and 0.5-0.6 g II were dissolved separately in a solution of 1 g I in 70 ml H_2O. The two solutions were mixed and yielded a violet crystalline precipitate. The crystals dissolved in hot water and decomposed in HCl, H_2SO_4 and HNO_3 with a color change to green (CrIII). The compounds were analyzed for their RE oxide, Cr, S and N contents, so that their general formula $[LnNicot_3][Cr(CNS)_6]$ could be derived, where Nicot is I. Their solubility in water was established from the Cr content determined photocalorimetrically at $25 \pm 0.5°C$ as K_2CrO_4. Following the order of the Ln group it decreased from 4.71 g/l for the La complex to 1.87 for Gd and

Card 2/ ... ard 1/2

ACCESSION NR: AR4015682   S/0081/63/000/023/0089/0089

SOURCE: RZh. Khimiya, Abs. 23B612

AUTHOR: Perov, E. I.; Serebrennikov, V. V.

TITLE: Reduction of europium at a dropping mercury electrode in a citrate-acetate medium

CITED SOURCE: Tr. Tomskogo un-ta, v. 154, 1962, 161-165

TOPIC TAGS: europium, europium reduction, electrolytic reduction, dropping mercury electrode, polarography, amalgam

TRANSLATION: In citrate and acetate solutions in which stable Eu^{+3} complexes are formed in neutral and basic pH ranges, double-wave polarograms of Eu^{+3} were observed. The first wave corresponds to the reaction $Eu^{+3} + e \longrightarrow Eu^{+2}$, the second to the reaction $Eu^{+2} + 2e \longrightarrow Eu(Hg)$. The existence of the second process was confirmed by the electrolysis of solutions isotopically labeled with Eu^{152} and Eu^{154}. At a dropping Hg-electrode with subsequent determination of the radioactivity of the Eu amalgam formed, the radioactivity of the Hg cathode increases sharply at the potential of the second wave of Eu^{+3}, which indicates the formation of an Eu amalgam. In the presence of lithium citrate the $E_{1/2}$ of the first

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ACCESSION NR: AR4015682

wave shifts sharply to the negative side, which shows the high stability of the Eu (3+) complex in this medium. The acetate complex of Eu (3+) has low stability. Judging by the slope of the logarithmic graph of the wave $\Delta E/\{\Delta \lg i/[i \text{ (initial)} - i]\} = 0.1$-$0.13$ volts, the first process proceeds irreversibly. The second process is probably reversible (the slope of the wave ~ 0.03). S. Zhdanov

SUB CODE: IC   DATE ACQ: 09Jan64   ENCL: 00

Card 2/2

GORELOV, I.P.; SEREBRENNIKOV, V.V.

Absorption spectrum of iodine in aqueous solutions of iodides.
Zhur. fiz. khim. 36 no.9:2075-2078 S '62.   (MIRA 17:6)

1. Tomskiy gosudarstvennyy universitet.

SEREBRENNIKOV, Viktor Vasil'yevich; ALEKSEYENKO, Lyudmila Arsen'yevna;
MAYDANOVSKAYA, L.G., dots., red.

[Course in the chemistry of rare earth elements; scandium,
yttrium, lanthanides] Kurs khimii redkozemel'nykh elementov;
skandii, ittrii, lantanidy. Tomsk, Izd-vo Tomskogo univ., 1963.
437 p.   (MIRA 17:7)

L 10758-63 _____ EWP(q)/EWT(m)/BDS—AFFTC/ASD—JD _____
8/0186/63/005/003/0347/0350
ACCESSION NR: AP3003684

AUTHOR: Mar'yanov, B. M.; Serebrennikov, V. V.   54

TITLE: On the determination of certain rare-earth elements by radiometric
titration with cupferron

SOURCE: Radiokhimiya, v. 5, no. 3, 1963, 347-350

TOPIC TAGS: rare-earth elements, Nd, Lu, Ce, cupferron, radiometric titration,
radioactive tracers, tracers

ABSTRACT: The determination of the rare-earth elements Ce, Nd, and Lu was ac-
complished by radiometric titration with cupferron precipitation titrant in the
presence of radioactive tracers. The titration of $(0.5—0.7)10^{-2}$ M solutions of
cerium(III), neodymium, or lutetium nitrates with cupferron was conducted in an
ammonium acetate buffer solution of pH 5 in the presence of NaCl, which lowers
the solubility of the precipitates and promotes their coagulation. The radio-
active tracers used were Ce, Pm[147] (titration of Nd only), and Lu[177] with specific
activities of 18.5 microcuries/ml, 10 microcuries/ml, and 90 microcuries/g, re-
spectively. Nd and Lu were determined by placing in a calibrated centrifuge tube
1 to 0.05 ml of the nitrate solution containing 1.0 to 0.05 mg Nd or Lu, 0.8 g of

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L-10758-63
ACCESSION NR: AP3003684   O

NaCl, 1 to 1.5 ml of the buffer solution, and the Pm^{147} or Lu^{177} tracer. The
solutions were titrated with cupferron solution, diluted to 3 ml with distilled
water, and centrifuged. Samples of 0.05 to 0.10 ml of the supernatent liquid were
taken, and their activity was measured. The initial activity for Nd was 1500 to
2500 cpm. Titration curves for Nd with 50 γ/ml or less are shown in Fig. 1 of
Enclosure. The titration error for an Nd content of 0.016 to 0.35 mg/ml was 0.5
to 5%. For an Lu content of 0.02 to 0.35 mg/ml the error was no more than 5%.
Cerium was determined by cupferron titration of 10 ml of nitrate solution con-
taining 1.9 to 0.11 mg Ce, 1.2 to 1.5 g NaCl, 1.0 to 0.07 ml of 5% hydroxylamine
hydrochloride solution, which prevents the oxidation of Ce(III) to Ce(IV), 1.5
to 2 ml of the buffer solution, and the Ce^{144} tracer. Owing to the nature of the
precipitate, vacuum filtration was used instead of centrifugation. The titration
curve is shown in Fig. 2 of Enclosure. The initial activity was approximately
2500 cpm. The maximum error was 4% or less for a concentration of 0.045 to
0.25 mg Ce/ml. Orig. art. has: 2 figures and 3 tables.

ASSOCIATION: none

SUBMITTED: 23Feb62   DATE ACQ: 07Aug63   ENCL: 01

SUB CODE: 00   NO REF SOV: 007   OTHER: 002
Card 2/3

- 5 (2/52) -

S/075/63/018/001/005/010
E071/E452

AUTHORS: Mar'yanov, B.M., Serebrennikov, V.V.

TITLE: The determination of neodymium by the method of
radiometric titration with halogen derivatives of
8-hydroxyquinoline

TEXT: A new method of determining gamma quantities of neodymium
by the radiometric titration of its solutions with alkaline
solutions of 5,7-dichloro- and 5,7-dibromo-8-hydroxyquinoline
using Pm147 as an indicator was developed.   The maximum error
when using 5,7-dichloro-8-hydroxyquinoline (at a neodymium content
in the solution of 2 to 60 µg/ml) amounts to 3% and when using
5,7-dibromo-8-hydroxyquinoline (at a neodymium content in the
solution of 5 to 30 µg/ml) does not exceed 7.5%.   A comparison
of the data on the radiometric titrations of some rare earth
elements with various organic substances indicated that according
to the sensitivity the reagents can be placed in the following
series: dihalogen-8-dihydroxyquinoline > 8-hydroxyquinoline >
cupferron > oxalic acid.   There are 1 figure and 2 tables.

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The determination of neodymium ...   S/075/63/018/001/005/010
                                       E071/E452

ASSOCIATION: Tomskiy universitet im. V.V.Kuybysheva
             (Tomsk University imeni V.V.Kuybyshev)

SUBMITTED: March 28, 1962

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L 31317-65   EWT(m)/EWP(t)/EWP(b)   IJP(c)   JD/JG
ACCESSION NR: AR5003882   S/0081/64/000/018/G007/G007

SOURCE: Ref. zh. Khimiya, Abs. 18G65

AUTHOR: Mar'yanov, B. M.; Serebrennikov, V. V.

TITLE: Determination of the cerium group rare earth elements by radiometric
titration with 8-hydroxyquinoline

CITED SOURCE: Tr. Tomskogo un-ta, v. 157, 1963, 8-11

TOPIC TAGS: chemical analysis, rare earth element, cerium, radiometric titration

TRANSLATION: It was shown that it is possible to carry out radiometric titration
of Ce(III) and Nd(III) with hydroxyquinoline in pure salt solutions in the presence
of Pm^{147} isotope as the radioactive indicator. The titration is carried out in an
ammonium buffer solution at pH 9 in the presence of tartrate ions which prevent
precipitation of hydroxides. During the titration of Ce, $NH_2OH \cdot HCl$ is added to the
solution to prevent the oxidation of Ce(III) to Ce(IV). The titration with
8-hydroxyquinoline permits determination of significantly smaller amounts of rare
earth elements than radiometric titration with oxalic acid and it does not require
extended waiting periods for complete precipitation. The error in determination is

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L 31317-65
ACCESSION NR: AR5003882

±5%. Satisfactory results were not obtained in titration of elements of the Y
group apparently due to the formation of binary tartrates. Substitution of citric
acid for tartaric acid did not produce favorable effects. S Pirozhkov.

SUB CODE: IC, GC   ENCL: 00

Card 2/2

L 11318-65   EWT(m)/EWP(t)/EWP(b)   IJP(c)   JD/JG
ACCESSION NR: AR5003883   S/0081/64/000/018/G007/G008

SOURCE: Ref. zh. Khimiya, Abs. 18G66

AUTHOR: Perov, E. I.;   Serebrennikov, V. V.

TITLE: Polarographic analysis of rare earth elements

CITED SOURCE: Tr. Tomskogo un-ta, v. 157, 1963, 123-127

TOPIC TAGS: polarographic analysis, rare earth element, chemical analysis

TRANSLATION: A polarographic analysis method is described for the determination of
Eu and Yb in the presence of other rare earth elements. Eu and Yb in 0.1 M KCl
supporting electrolyte produce waves with $E_{1/2}$ - 0.7L and - 1.395 V (with respect to
saturated calomel electrode) respectively. The wave heights are proportional to
the concentration of these elements in the $5 \cdot 10^{-5}$ - $2 \cdot 10^{-3}$ moles/l concentration
interval. The Yb wave is most pronounced at pH 5 - 6. The error in determining Eu
is ± 5% and Yb ± 10%. Sm and Ce interfere with the determination. For the deter-
mination of Eu and Yb, the sample is dissolved in HCl, the pH of the solution is
adjusted to 3 with NH_4OH, heavy elements are precipitated with H_2S, the solution is
boiled and filtered. Rare earth hydroxides are then precipitated with ammonia, the

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L 31318-65

ACCESSION NR: AR5003883   0

precipitate is washed, dissolved in HNO_3, 1 ml of concentrated H_2O_2 is added and Ce
is precipitated with NH_4OH solution at pH 3.4. In the filtrate, rare earth oxa-
lates are precipitated, the precipitate is filtered off and converted to oxides.
0.2 g of the oxalates is dissolved in HCl, evaporated to dryness, dissolved in 100
ml of water, the pH is adjusted to 5.5 - 6.0 and polarographs are taken. The con-
centration is determined by the standard addition method. $ZnCl_2$ may be used as a
standard, using a coefficient of 2.98 in conversion to Eu and 2.91 as the coeffi-
cient for Yb. G. Prokhorova.

SUB CODE: IC, OP   ENCL: 00

Card 2/2

L 31314-65   EWT(m)/EWA(d)/EWP(t)/EWP(b)   IJP(c)   JD/JG/WB
ACCESSION NR: AR5003880   S/0081/64/000/018/B090/B090

SOURCE: Ref. zh. Khimiya, Abs. 18B624

AUTHOR: Perov, E. I.; Serebrennikov, V. V.

TITLE: Separation of europium from dilute solutions by electrolysis on a multiple drop mercury cathode

CITED SOURCE: Tr. Tomskogo un-ta, v. 157, 1963, 187-194

TOPIC TAGS: rare earth, element, europium, samarium, ytterbium, electrolysis, mercury cathode, pH value

TRANSLATION: It has been confirmed that in a citrate-acetate medium europium (3+) forms two polarographic waves (RZhKhim, 1963, 23B612). If the reduction potential is reached for an alkali metal, its amalgam will then cement europium (3+) out of the solution and the concentration of europium in the amalgam will increase. Other rare earth elements, among them samarium and ytterbium, are not reduced in this medium, and europium can be separated from them by electrolysis. The effect of different conditions was studied with

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L 31314-65
ACCESSION NR: AR5003880

a multiple drop mercury electrode, which made it possible to accumu-
late considerable amounts of amalgam. The yield of europium remained
constant over a broad range of pH. In an acid medium, the europium
amalgam decomposes and the yield diminishes. The yield also diminish-
es in a strongly alkaline medium, probably as a result of the forma-
tion of more strongly bound hydroxy complexes of europium (3+).
Maximum yield of europium is observed with a fourfold excess of
citrate ions. G. Zhdanov.

SUB CODE: IC, GC   ENCL: 00

Card 2/2

S/0000/64/000/000/0140/0146

ACCESSION NR: AT4040550

AUTHOR: Manenkova, R. N.; Serebrennikov, V. V.

TITLE: Spectrophotometric investigations of nonaqueous solutions of praseodymium, neodymium, samarium and erbium compounds

SOURCE: Soveshchaniye po khimii redkikh elementov. Leningrad, 1961. Khimiya redkikh elementov (Chemistry of rare elements); doklady* soveshchaniya. Leningrad, Izd-vo Leningr. univ., 1964, 140-146

TOPIC TAGS: rare earth, praseodymium, neodymium, erbium, samarium, lanthanum, spectrophotometry, rare earth perchlorate, absorption spectrum, nonaqueous solution, acetic anhydride, acetic acid, acetone, pyridine, hydroxyquinoline

ABSTRACT: The authors investigated the absorption spectra (290-1100 mμ) of crystalline hydrates of praseodymium, neodymium, samarium and erbium perchlorates in nonaqueous acetic acid, acetic anhydride, acetone and pyridine solutions (0.1-0.2 M), as well as the interaction of rare elements of the cerium group with o-hydroxyquinoline in these solvents. Spectrophotometric measurements on praseodymium, erbium and samarium perchlorates showed a small

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ACCESSION NR: AT4040550

shift on the order of 1-3 mµ only in pyridine, into the long-wave region for
the first two and into the short-wave region for samarium. Neodymium showed
a shift to the short-wave region in solutions of acetone and pyridine and into
the long-wave region in solutions of acetic acid and acetic anhydride, when
compared to water. The interaction of these perchlorates with o-hydroxy-
quinoline in acetone, pyridine and acetic acid produced an increase in absorp-
tion and a shift of the absorption band into the long-wave region. The shift
observed was from 400-500 mµ to 400-540 mµ, indicating not just an additive
effect but an interaction of the compounds. During the study of complex
formation between neodymium perchlorate and o-hydroxyquinoline in acetone
solution, by the method of isomolar series, it was found that if the ratio
of Nd:Ox = 2:3, a bright yellow precipitate was formed, which could be dis-
solved by shaking. If the ratio of Nd:Ox = 3:7 or 1:4, the amount of pre-
cipitate was increased but it still disappeared with shaking. At a ratio of 1:9
the precipitate did not dissolve. At Nd:Ox ratios of 2:3, 3:7 or 1:4, an
increased shift of the absorption maximum was observed. Qualitative analysis
of the precipitate showed that it corresponds to $[NdOx_2OxH]ClO_4$ where OxH
and Ox^- are a molecule and an ion of o-hydroxyquinoline, respectively.
Analogous results were obtained with the other rare earths. Orig. art. has:

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ACCESSION NR: AT4040550

3 tables and 4 figures.

ASSOCIATION: none

SUBMITTED: 21Jan64   DATE ACQ: 28May64   ENCL: 00

SUB CODE: IC   NO REF SOV: 005   OTHER: 003

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L 54516-65   EWT(m)/EWP(t)/EWP(b)   IJP(c)   JD/JD

ACCESSION NR: AR5014263   UR/0081/65/000/007/B018/B018

SOURCE: Ref. zh. Khimiya. Abs. 7B95

AUTHOR: Slavkina, R.I.; Serebrennikov, V.V.

TITLE: Spectrophotometric study of nonaqueous solutions of compounds of praseodymium, neodymium, samarium, and erbium

CITED SOURCE: Uch. zap. Tomskiy un-t, no. 49, 1964, 17-21

TOPIC TAGS: spectroscopic analysis, rare earth determination, absorption spectrum, rare earth perchlorate, nonaqueous solution, cerium group analysis, hydroxyquinoline complex

TRANSLATION: The absorption spectra of crystal hydrates of Pr, Nd, Er, and Sm perchlorates were studied in solutions of acetic acid, acetic anhydride, acetone, and pyridine; the interaction of rare earths of the cerium group with o-hydroxyquinoline (Ox) was investigated in the same solutions in the 290-1100 mμ range. The data are compared with the absorption spectra of these compounds in water. Shifts of the absorption peaks of 1-3 mμ toward the long-wave region and an increase in the optical density of the bands in the nonaqueous solutions were observed; it is proposed that these changes be utilized to

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L 54516-65
ACCESSION NR: AR5014263

improve the sensitivity of the spectrophotometric determination of these rare earths. The spectra indicate the presence of an interaction between Ox and the rare earths in the nonaqueous solutions. Use of the method of isomolar series in acetone solutions revealed the presence of complex ions of the type $[LnOx]^{2+}$, where $Ln = La$, Pr, Nd, Sm, and Gd, which has the maximum optical density as compared to the other complexes. At a ratio greater than 1:1, the optical density decreases, probably owing to the formation of the complex $[LnOx_2]^{1+}$, which dissolves in acetone. In the concentration range corresponding to the ratio $Ln:Ox = 1:9$, precipitates of the composition $(LnOx_2OxH)ClO_4$ separate. M. Zakharova.

SUB CODE: IC, OP ENCL: 00

Card 2/2

ACCESSION NR: AP4029181   S/0078/64/009/004/0786/0788

AUTHOR: Surgutskiy, V. P.; Serebrennikov, V. V.

TITLE: Reduction of anhydrous yttrium and rare earth element sulfates with carbon monoxide

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 4, 1964, 786-788

TOPIC TAGS: rare earth element, carbon monoxide reduction, lanthanum sulfate, lanthanum oxysulfide, praseodymium sulfate, praseodymium oxysulfide, neodymium sulfate, neodymium oxysulfide, samarium sulfate, samarium oxysulfide, gadolinium sulfate, gadolinium oxysulfide, terbium sulfate, terbium oxysulfide, dysprosium sulfate, dysprosium oxysulfide, holmium sulfate, holmium oxysulfide, thulium sulfate, thulium oxysulfide, erbium sulfate, erbium oxysulfide, ytterbium sulfate, ytterbium oxysulfide, yttrium sulfate, yttrium oxysulfide, semiconductor

ABSTRACT: Since rare earth sulfides and oxysulfides display semiconductor properties, methods for preparing them are of interest. The behavior of anhy-

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ACCESSION NR: AP4029181

drous rare earth sulfates (La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tu, Yb and Lu, and Y) in a CO atmosphere at 500-800C was investigated. Reduction in the 600-650C range results in the formation of oxysulfides Ln_2O_2S; above 750—800C oxysulfides with less sulfur than in Ln_2O_2S are formed. The temperatures at which the rare earth sulfate reduction with CO commences and concludes were determined thermogravimetrically (figs. 1 and 2). The trend is toward lower temperatures in going from La to Gd, and increasing temperatures in the series from Gd toward Lu. The anomalous low reduction (start and conclusion)temperatures for Ce, Pr, Sm and Eu sulfates is attributed to their variable valence. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Tomskiy gosudarstvenny*y universitet Kafedra neorganicheskoy khimii (Tomsk State University, Department of Inorganic Chemistry)
SUBMITTED: 04Jan63 .   ATD PRESS: 3047   ENCL: 02

SUB CODE: IC   .   NO REF SOV: 006   OTHER: 000

Card 2/4

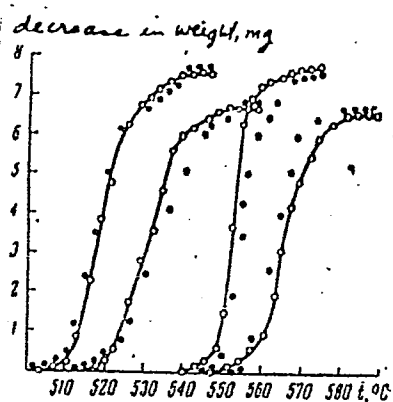ACCESSION NR: AP4029181   ENCLOSURE: 01

Fig. 1

Thermogravimetric curves of the reduction of rare earth element sulfates with carbon monoxide (from left to right: first--Ce; second--Sm; third--Pr and fourth--Ho).

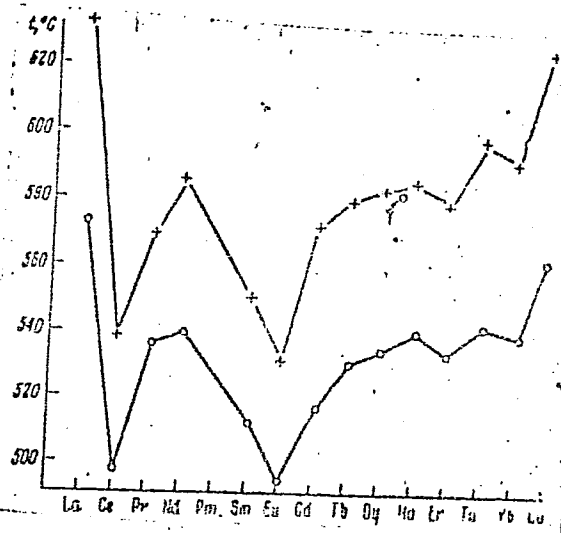Card 3/4

ACCESSION NR: AP4029181

Fig. 2

Temperatures of the start and con-
clusion of the rare earth
sulfates reduction process with car-
bon monoxide. Points on the upper
curve correspond to temperatures
at the end of the process of reduc-
ing sulfates to oxysulfides, points
on the lower curve temperatures
at the start of weight loss by the
sulfates

Card 4/4

ACCESSION NR: AP4039268   S/0078/64/009/006/1483/1485

AUTHOR: Skorik, N. A.; Serebrennikov, V. V.

TITLE: Basic citrates of yttrium, potassium and some rare earth elements

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 6, 1964, 1483-1485

TOPIC TAGS: citrate, double salt, yttrium salt, potassium salt, lanthanum salt, praseodymium salt, neodymium salt, samarium salt, gadolinium salt, terbium salt, dysprosium. salt, ytterbium salt, rare earth metal

ABSTRACT: Citric acid solutions and citrates are widely used as elements in the separation of rare earth elements on ion-exchange resins. The state of yttrium and rare earth elements in citrate systems in a broad pH range represents both a theoretical and practical interest. This article describes basic potassium rare earth citrates and basic potassium yttrium citrate. To produce basic citrates a 0.1 N solution of KOH was added to the weighed sample of yttrium citrate or rare earth citrate in an amount sufficient to produce 1:1 ratio with the citrate. Here La, Pr and Na citrates dissolved upon heating while Sm, Gd, Y, Yb, Tb and Dy citrates dissolved without any heating. Upon addition of alcohol-ether (1:1)

Card   1/2

ACCESSION NR: AP4041582   s/0078/64/009/007/1613/1616

AUTHOR: Vasil'yev, G. I.; Serebrennikov, V. V.

TITLE: Pyrophosphates of some rare earth elements and of yttrium

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 7, 1964, 1613-1616

TOPIC TAGS: rare earth pyrophosphate, pyrophosphate, rare earth element, yttrium, solubility

ABSTRACT: Incomplete and sometimes contradictory data on the preparation of rare earth pyrophosphates prompted the authors to ascertain the preparation conditions of neutral pyrophosphates of lantanum, cerium, praseodymium, neodymium, samarium, gadolinium (of the type $La_4(P_2O_7)_3 \cdot 24H_2O$), dysprosium, erbium, lutecium (of the type $La_4(P_2O_7)_3 \cdot 36H_2O$) and yttrium $(Y_4(P_2O_7)_3 \cdot 18H_2O$. They were prepared from their chlorides and sodium pyrophosphate neutralized with HCl. The solubility of pyrophosphates in water at 25C was determined. It changes according to the numbers of the rare earth elements with gadolinium at the minimum. Yttrium pyrophosphate solubility coincides with that of gadolinium and dysprosium. Orig. art. has 3 figures, no formulas, 2 tables.

Card 1/2

ACCESSION NR: AP4041582

ASSOCIATION: None

SUBMITTED: 09May63   DATE ACQ: 00   ENCL: 00

SUB CODE: TG   NO REF SOV: 008   OTHER: 006

Card 2/2

ACCESSION NR: AP4041586   S/0078/64/009/007/1658/1661

AUTHOR: Bayanov, A. P. ; Serebrennikov, V. V.

TITLE: Distribution of some rare earth elements in a binary metal melt

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 7, 1964, 1658-1661

TOPIC TAGS: rare earth extraction, molten rare earth distribution, rare earth element, binary metal melt, limited mutual solubility

ABSTRACT: The work was prompted by the necessity of separating nuclear fuel from radioisotopes and of studying the chemistry of molten media. In the present case, distribution of La, Ce, Pr, Nd, Sm and Y among Zn and Pb at 500C and of Ce in Al-Cd, Al-Pb, Al-Bi and Zn-Pb at 700C was investigated. These systems are characterized by limited mutual solubility in the molten state. Cerium in these tests was tagged with Ce^{144}. Melting was done in an argon atmosphere. Distribution factors in Zn/Pb systems vary between $2.8 \cdot 10^3$ and $6 \cdot 10^3$ at 500C. For other metal systems, it has been determined that the distribution coefficients form the following series: Zn, Bi > Al > Pb >> Cd. It is supposed that "metallization" (a process analogical to solvation) of cerium in molten zinc is highest and in molten cadmium

Card 1/2

L 17531-65   EWT(m)/EWP(j)/EWP(t)/EWP(b)   JD/JG/RM
ACCESSION NR: AP4044810   S/0078/64/009/009/2148/2152

AUTHOR: Kumok, V. N.; Serebrennikov, V. V.

TITLE: Monothiocyanate complexes of certain elements in aqueous solutions

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 9, 1964, 2148-2152

TOPIC TAGS: rare earth monothioxyanate, rare earth extraction, rare earth
thiocyanate extraction, monothiocyanate complex, spectrophotometric determina-
tion, stability constant

ABSTRACT: The stability constants of the monothiocyanate complexes of the rare
earth elements were determined to provide data for the possible extraction of the
rare earth elements as thiocyanates. The determinations were made spectrophoto-
metrically from the weakening of the optical density of the $FeCNS^{2+}$ solution.
The stability constants for the $FeCNS^{2+}$, $CoCNS^{+}$ and $CdCNS^{+}$ were determined
at 20C at various concentrations (μ = 0.60, 0.30 and 0.15); the stability constants
for the monothiocyanates of the trivalent In, Ga, Sc, Y, La, Nd, Sm, Gd, Dy
and Er were determined for μ = 0.60 at 20C. Possible causes for systematic

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L 17531-65
ACCESSION NR: AP4044810

errors in the values (deviations from the data in the literature) were attributed to
the possible formation of the $Fe(CNS)_2^+$ ion, of the $Fe(CNS)(ClO_4)^+$ or the
$Me(CNS)^{n+}$ complexes or to partial exchange of the $HClO_4$ for the $Me(ClO_4)_3$
background. It was indicated the values obtained for the stability constants are
not to be considered absolute, but their order of magnitude and the general trend
in the changes in the stabilities is believed reliable. The stability constants of
the rare earth monothiocyanate complexes increased with the periodic number of
the elements up to gadolinium, then decreased slightly thereafter. Orig. art.
has: 3 figures and 3 tables

ASSOCIATION: Tomskiy gosudarstvennyy universitet im. V. V. Kuiby*sheva
Kafedra neorganicheskoy khimii (Tomsk State University, Department of Inorganic
Chemistry)

SUBMITTED: 03Jan64   ENCL: 00

SUB CODE: GC, OP   NO REF SOV: 010   OTHER: 014

Card 2/2

VASIL'YEV, G.I.; SEREBRENNIKOV, V.V

Metaborates of some rare-earth elements. Zhur. neorg. khim.
9 no.10:2490-2492 O '64.   (MIRA 17:12)

SURGUTSKIY, V.P.; SEREBRENNIKOV, V.V.

Kinetics and mechanism of reduction of rare-earth sulfates
by carbon monoxide. Zhur.neorg.khim. 11 no.1:33-38
Ja '66.   (MIRA 19:1)

1. Tomskiy gosudarstvennyy universitet imeni V.V.Kuybysheva.
Submitted January 13, 1964.

L 39408-65   EWT(m)/EWP(t)/EWP(b)   IJP(c)   JD/JG
ACCESSION NR: AP5006069   S/0139/65/000/001/0181/0183

AUTHOR: Slavkina, R. I.; Serebrennikov, V. V.

TITLE: Concerning the series of solvents arranged in increasing order of oscil-
lator strength of the absorption bands of ions of praseodymium, neodymium,
samarium, and erbium

SOURCE: IVUZ. Fizika, no. 1, 1965, 181-183

TOPIC TAGS: oscillator strength, absorption band, rare earth element, spectral
photometry

ABSTRACT: In view of the lack of data on the oscillator strengths for the absorp-
tion bands of rare-earth elements in non-aqueous solutions, the authors present
the sequences of nine organic solvents and water arranged in increasing order of
oscillator strength for the ions of praseodymium, neodymium, samarium, and erbium
in the form of crystal hydrates and anhydrous chlorides and perchlorates. The
preparation of the crystal hydrates is described briefly. The solvents used were
water, acetone, methylethylketone, propyl alcohol, butyl alcohol, ethylene glycol,
glycerine, pyridine, acetic acid, and acetic anhydride. All absorption spectra

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L 39408-65
ACCESSION NR: AP5006069   /

vere measured with an SF-4 spectrophotometer in the 350—650 nm wavelength region.
The results are summarized in a table. The location of the organic solvent in the
series depends on the position of the absorption band in the spectrum, on the
anion of the salt, and on the presence of water of crystallization. Orig. art.
has: 1 table and 1 formula.

ASSOCIATION: Tomskiy gosuniversitet imeni V. V. Kuybysheva (Tomsk State Univer-
sity)

SUBMITTED: 26Mar64   ENCL: 00   SUB CODE: OP, OC

NR REF SOV: 003   OTHER: 000

nue
Card 2/2

L 34506-65   EWT(m)/EWG(m)/EWP(j)/T/EWP(t)/EWP(b)   Pc-4/Pad   IJP(c)   RDW/JD/HW
ACCESSION NR: AP5002805   S/0078/65/010/001/0279/0281

AUTHOR: Skorik, N. A.; Serebrennikov, V. V.

TITLE: Compounds of certain rare earth elements with cobalt, cadmium and zinc complexonates

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 1, 1965, 279-281

TOPIC TAGS: rare earth cobalt complexonate, rare earth cadmium complexonate, rare earth zinc complexonate, ethylenediaminetetraacetic acid complex, thermal stability, solubility, rare earth

ABSTRACT: The following salts of the rare earth elements with complexonates were obtained: $Ln_2[MeY]_3 \cdot xH_2O$, where Ln=La, Ce, Pr, Nd, Sm and Gd, Me = Zn, Cd and Co^{2+}, and H_4Y = ethylenediaminetetraacetic acid. The solubilities of these salts in H_2O at 25C were determined; the solubility of salts of one and the same rare earth element decreased in the order: $Zn > Co^{2+} > Cd$, and for lanthanides with one and the same divalent metal, the solubility changed according to the series Gd>Sm>Nd>Pr>Ce>La. Examination of the thermal stability showed

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L 34506-35

ACCESSION NR: AP5002805

that there was slight loss of water below 103C, the remaining water was lost at 103-170C, and the organic portion of the compounds decomposed at 300-400C. Upon electrolysis of aqueous solutions of the salts, the divalent metal was concentrated in the anodic compartment, indicating it remained in the structure of the acid complex. Orig. art. has: 2 tables and 2 figures.

ASSOCIATION: None

SUBMITTED: 20Nov63   ENCL: 00   SUB CODE: GC, IC

NR REF SOV: 004   OTHER: 003

Card 2/2

L 36699-65   EWP(j)/EWT(m)/EWP(b)/T/EWP(t)   Pc-4   IJP(c)   RM/JD/JG

ACCESSION NR: AP5005008   S/0078/65/010/002/0407/0409

AUTHOR: Skorik, N. A.; Serebrennikov, V. V.

TITLE: Dependence of the solubility of the citrates of certain rare earth elements on the pH of the medium

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 2, 1965, 407-409

TOPIC TAGS: rare earth citrate, solubility, hydroxy citrate complex

ABSTRACT: The solubility of La, Pr, Nd, Gd, Er and Y citrates in (Na, H) perchlorate solutions in the 2-10.6 pH range at $\mu = 0.1$ was determined. The solubility of these compounds decreased as pH increased from 2-5; minimum solubility was at pH 5-6.5, when the composition of the citrates in the liquid and solid phases was the same; the solubility then increased rapidly above this pH. The citrate complex was partially decomposed and hydrolysed to $[H_nCit]^{3-n}$ below pH 5; the hydroxy citrate acid complex $[Ln(OH)_nCit]^{n-}$ was formed at pH > 6.5. Orig. art. has: 2 tables and 1 figure

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L 36699-65

ACCESSION NR: AP5005008

ASSOCIATION: None

SUBMITTED: 04Jul63   ENCL: 00   SUB CODE: IC, GC

NR REF SOV: 006   OTHER: 003

Card 2/2

L 55909-65   EWT(m)/EWP(t)/EWP(b)   IJP(o)   JD/JG
ACCESSION NR: AP5008481   8/0078/65/010/003/0653/0656

AUTHOR: Skorik, N. A.; Kumok, V.N.; Perov, E.I.; Avgustan, K.P.;Serebrennikov,V.V.

TITLE: Citrate complexes of rare earth elements in acid solutions

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 3, 1965, 653-656

TOPIC TAGS: citrate complex, citrate ion, rare earth element, rare earth element ion, solubility product, lanthanum ctirate, praseodymium citrate, neodymium citrate

ABSTRACT: A determination of β_1 and β_2 stability constants of LnCit and $LnCit_2^{3-}$ and of solubility products of $LnCit \cdot nH_2O$ precipitates for La^{3+}, Pr^{3+}, and Nd^{3+} was carried out at 0.10 ionic strength and 25C to obtain quantitative data on ionic equilibrium. The citrate ion in the presence of excess lanthanum was determined by a specially developed method (by absorption of the Cu^{2+} citrate complexes) with an SF-4 spectrophotometer. Solubility curves of $LnCit \cdot nH_2O$ as a function of pH, as well as solubility curves of $LaCit \cdot 3H_2O$, $PrCit \cdot 3.5H_2O$, and $NdCit \cdot 3.5H_2O$ in $NaClO_4$ — Na_3Cit solutions at pH 6.7-7.4 and in $NaClO_4$ — $Ln(ClO_4)_3$ solutions at pH 5.7 have

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L 55909-65
ACCESSION NR: AP5008481

been reinvestigated. The results have been reduced to zero ionic strength and pre-
sented in Tables 1 and 2 of the Enclosure. Orig. art. has: 3 formulas and 2
tables.

ASSOCIATION: Kafedra neorganicheskoy khimii, Tomskiy gosudarstvennyy universitet
im. V. V. Kuybysheva (Department of Inorganic Chemistry, Tomsk State University)

SUBMITTED: 16Sep63   ENCL: 02   SUB CODE: IC

NO REF SOV: 005   OTHER: 005

Card 2/4

PASHNEVA, G.Ye.; SLAVNINA, T.P.; SEREBRENNIKOV, V.V.

Content of rare earth elements and thorium in principal soils of
Tomsk Province. Izv. SO AN SSSR no.4 Ser. biol.-med.nauk no.1:48-
52 '65.   (MIRA 18:8)

1. Tomskiy gosudarstvennyy universitet.

ARHIT, Ye.A.; SEREBRENNIKOV, V.V.

      Compounds of rare-earth elements and yttrium with vanadic
      acids. Zhur. neorg. khim. 10 no.2:410-413 F '65.
                                 (MIRA 18:11)

      1. Submitted July 5, 1963.

BAYANOV, A.P.; SEREBRENNIKOV, V.V.

Electromotive force study of the thermodynamic properties of cerium
and erbium in some molten metals. Zhur. fiz. khim. 39 no.3:717-721
Mr '65.   (MIRA 18:7)

1. Tomskiy gosudarstvennyy universitet imeni Kuybysheva.

L 10445-66   EWT(m)/EWP(j)/T/EWP(t)/EWP(b)   IJP(c)   JD/JG/RM

ACC NR: AP6000282   SOURCE CODE: UR/0078/65/010/009/2011/2018

AUTHOR: Kumok, V.N.;

Serebrennikov, V.V.

ORG: Department of Inorganic Chemistry, Tomsk State University im. V.V. Kuybyshev
(Kafedra neorganicheskoy khimii, Tomskiy gosudarstvennyy universitet)

TITLE: Stability of complex compounds of rare earth elements

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 9, 1965, 2011-2018

TOPIC TAGS: rare earth element, complex molecule, lanthanum, stability constant,
least square method

ABSTRACT: The authors have collected practically all the reported determinations (carried
out at 20 — 30C at any constant ionic strength) of the stability constant β_1 of 1:1 rare
earth complexes. Using the method of least squares, they calculated parameters $\underline{a}$ and $\underline{b}$
of the equations of the curves

$$\log \beta_{Ln} = \underline{a} \log \beta_{La} + \underline{b}.$$

These parameters permit a statistical generalization of the existing data on the stability
constants of rare earth complexes and lead to certain conclusions concerning the change
in the stability of complexes in the rare earth series. They also enabled the authors to
predict the values of $\log \beta_{Ln}$ from the measured value of $\log \beta_{La}$ (or $\log \beta_{Ce}$, after a

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UDC: 546.65:541.49

L 10445-66

ACC NR: AP6000282

simple conversion). Causes of deviations from the linear dependence of log β_{Ln} on log β_{La} and the possible physical meaning of the parameters are discussed. Orig. art. has: 1 figure, 4 tables, and 3 formulas.

SUB CODE: 07 / SUBM DATE: 18Feb64 / ORIG REF: 008 / OTH REF: 036

Card 2/2

L 10444-66   EWT(m)/EWP(j)/T/EWP(t)/EWP(b)   LJP(c)   JD/JG/RM

ACC NR: AP6000283   SOURCE CODE: UR/0078/65/010/009/2019/2022

AUTHOR: Kumok, V.N.;   Serebrennikov, V.V.

ORG: Department of Inorganic Chemistry, Tomsk State University im. V.V. Kuybyshev (Kafedra neorganicheskoy khimii, Tomskiy gosudarstvennyy universitet)

TITLE: Stability of complex compounds of cations of the calcium and scandium subgroups

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 9, 1965, 2019-2022

TOPIC TAGS: lanthanide series, calcium, scandium, complex molecule, stability constant, correlation function, charged particle, ion, ionization potential

ABSTRACT: The object of the study was to determine parameters $\underline{a}$ and $\underline{b}$ of the correlations

$$\lg \beta_{ML} = \underline{a} \lg \beta_{LaL} + \underline{b} \qquad (1)$$

$$\lg \beta_{RL} = \underline{a} \lg \beta_{BaL} + \underline{b} \qquad (2)$$

where β_{ML}, β_{RL}, β_{LAL}, and β_{BAL} are the stability constants β_1 of the complex compounds M^{3+} and R^{2+} (Y^{3+}, Sc^{3+}, Sr^{2+}, and Ca^{2+}), La^{3+}, and Ba^{2+} respectively. In order to determine the dependence of parameter a_{ij} on the charges z of ions i and j participating in the correlation, the parameters of the following relation were calculated:

$$\lg \beta_{BaL} = \underline{a} \lg \beta_{LaL} + \underline{b}.$$

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L 10444-66

ACC NR: AP6000283

The values obtained were: $\underline{a} = 0.5806 \pm 0.0079$; $\underline{b} = -0.996 \pm 0.082$; $s = 0.441$ (standard deviation). It is shown that parameter a_{ij} is equal to the ratio of the ionic potentials z_i/r_{iw} and z_j/r_{jw} of the ions plus a correction for the effect of extrastabilization by the ligand field for ions with an unfilled f shell. Orig. art. has: 1 figure, 3 tables, and 6 formulas.

SUB CODE: 07,20/ SUBM DATE: 08Jun64 / ORIG REF: 008 / OTH REF: 010

Card 2/2

BAYANOV, A.P.; SEREBRENNIKOV, V.V.

Distribution of erbium in the fused systems Al - Cd, Al - Pb, and Al - Bi. Zhur,fiz.khim. 39 no.11:2816-2817 N '65.

(MIRA 18:12)

1. Tomskiy gosudarstvennyy universitet imeni V.V.Kuybysheva.

KUMOK, V.N.; SEREBRENNIKOV, V.V.

Complex compounds of lanthanum, yttrium, lutecium, and
scandium with xylenol orange. Zhur.neorg.khim. 11 no.1:
90-92 Ja '66.   (MIRA 19:1)

1. Kafedra neorganicheskoy khimii Tomskogo gosudarstvennogo
universiteta imeni V.V.Kuybysheva. Submitted July 8, 1964.

L 38675-66   EWT(m)/T/EWP(t)/ETI   IJP(c)   JD/JG

ACC NR: AP6008274   SOURCE CODE: UR/0080/66/039/002/0447/0448

AUTHOR: Bayanov, A. P.; Gurskaya, S. F.; Serebrennikov, V. V.

ORG: Tomsk State University im. V. V. Kuybyshev (Tomskiy gosudarstvennyy universitet)

TITLE: Distribution of rare earth metals and yttrium during crystallization of zinc
from fused lead

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 2, 1966, 447-448

TOPIC TAGS: rare earth metal, yttrium, lanthanide series, metal crystallization

ABSTRACT: A study was made of the distribution of yttrium and certain rare earth me-
tals in a system in which zinc is crystallizing from fused lead. The rare earth
metals included the series from lanthanum to luterium. Spectroscopic analysis was us-
ed in the determination of the distribution of the elements. The rare earth metals
and yttrium were found in both lead and zinc phases. The lighter rare earths (e. g.,
cerium) were concentrated in the molten lead, while the heavier rare earths (e.g., lu-
terium) and yttrium were principally found in the zinc phase. Orig. art. has: 1
table.

SUB CODE: 11,20/   SUBM DATE: 06Apr64/   ORIG REF: 003/   OTH REF: 001

                                    UDC: 546.65+546.641

Card 1/1   vmb

L 09980-67   EWT(m)/EWP(t)/ETI   IJP(c)   JD/JG
ACC NR: AP6034152   SOURCE CODE: UR/0076/66/040/010/2546/2550

57

AUTHOR: Bel'kova, M. M.; Alekseyenko, L. A.; Serebrennikov, V. V.

ORG: Tomsk State University im. V. V. Kuybyshev (Tomskiy gosudarstvennyy universitet)

TITLE: The kinetics of the thermal decomposition of perchlorates of the rare earth
elements yttrium, scandium, and aluminum

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 10, 1966, 2546-2550

TOPIC TAGS: rare earth perchlorate, perchlorate, perchlorate combustion, combustion,
combustion kinetics

ABSTRACT: The kinetics of the thermal decomposition of aluminum and rare-earth
perchlorates (Sc, Y, La, Ce, Sm, Gd, Ho, Yb, Lu,) was studied in nitrogen at
290—350C. Plots of the amount of decomposition vs time were obtained and the
activation energies and rate constants calculated. The results are shown in
Table 1. The table shows that the rate constants increase and the activation
energies decrease in the series from La to Al and from La to Lu. This is connected

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L 09980-67

ACC NR: AP6034152   O

Table 1. Rate constants and activation energies

Per-chlorate	t,°C	λ	E, Kcal/mol	Per-chlorate	t,°C	λ	E, Kcal/mol
Al	240	0,03359		Sm	320	0,01321	
	250	0,05403			330	0,02301	
	260	0,07042	19,8		340	0,02951	28,8
	270	0,09456			350	0,04094	
	290	0,19360		Gd	290	0,00988	
Sc	240	0,03027			300	0,01036	
	250	0,05175			320	0,03031	28,5
	260	0,07973	20,9		330	0,03321	
	270	0,09968			340	0,06112	
	290	0,29850			350	0,06469	
Y	280	0,01496		IIa	260	0,01508	
	290	0,02532			280	0,02235	
	320	0,04951	27,8		290	0,03402	
	330	0,08375			300	0,06998	26,0
	340	0,12130			320	0,15010	
La	330	0,00862			330	0,16430	
	340	0,00958			350	0,42800	
	350	0,01670	34,1	Yb	260	0,02601	
	370	0,07290			270	0,04105	
Co	240	0,01175			280	0,06362	
	260	0,01539			290	0,10300	25,3
	280	0,02036			320	0,29840	
	290	0,02690			330	0,36160	
	300	0,05222		Lu	290	0,08279	
	310	0,06976			300	0,16630	25,1
	320	0,46680			310	0,21850	

Card 2/3

L 09980-67

ACC NR: AP6034152

with the decrease in thermal stability due to the increase of the polarizing action of the cation. At 280C, the mechanism of the thermal decomposition of Ce changes. Orig. art. has: 4 figures, 5 formulas, and 1 table.

SUB CODE: 07/ SUBM DATE: 31Aug65/ ORIG REF: 007/ OTH REF: 004/
ATD PRESS: 5105

Card 3/3

SEREBRENIKOV, V. V.

"Investigation of the Operation of Cross-Braced Concrete Sleepers." Cand Tech Sci, All-Union Sci Res Inst of Railroad Transport, Moscow, 1954. (RZhMekh, Mar 55)

SO: Sum. No. 670, 29 Sep 55--Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

SEREBRENNIKOV, Vladimir Vasil'yevich; SOROKIN, N.N., redaktor; KHITROV, P.A.,
        tekhnicheskiy redaktor

    [Reinforced concrete railroad ties] Zhelezobetonnye shpaly. Moskva,
    Gos.transp.zhel-dor. izd-vo, 1956. 55 p.   (MIRA 9:12)
            (Railroads--Ties)

SEREBRENNIKOV, V.V., kandidat tekhnicheskikh nauk.

Results of an investigation on selecting types of reinforced
concrete ties. Vest.TSNII MPS 16 no.3:3-9 My '57   (MLRA 10:5)
(Railroads—Ties, Concrete)

ZOLOTARSKIY, Aleksey Fedorovich, kand.tekhn.nauk; SEREBRENNIKOV, Vladimir
Vasil'yevich, kand.tekhn.nauk; BERG, Oleg Yanovich, kand.tekhn.
nauk; SHESTOPEROV, Sergey Vladimirovich, prof., doktor tekhn.nauk;
VERIGO, Mikhail Feliksovich, prof., doktor tekhn.nauk; SOROKIN,
N.N., red.; VERINA, G.P., tekhn.red.

[Reinforced concrete ties] Zhelezobetonnye shpaly. Pod red.
M.F.Verigo. Moskva, Gos.transp.zhel-dor.izd-vo, 1959. 327 p.
          (Railroads--Ties, Concrete)   (MIRA 12:3)

SEREBRENNIKOV, V.V.; BYKOV, V.V.; AVDEYENKO, I.T.

NZU-1 pump for slope drainage. Ugol' Ukr. 5 no,4:39 Ap '61.
(MIRA 14:4)

(Mine pumps)

CHUPAKHINA, R.A.; INDUKAYEV, Yu.V.; SEREBRENNIKOV, V.V.

Lanthanum, praseodymium, neodymium, samarium, and gadolinium argento-
cyanides. Zhur.neorg.khim. 6 no.12:2713-2715 D '61.
(MIRA 14:12)

(Rare earth compounds)

VASIL'YEV, G.I.; SEREBRENNIKOV, V.V.

Arsenites of some rare earths and yttrium. Zhur.neorg.khim. 6
no.12:2716-2718 D '61.   (MIRA 14:12)
                              (Rare earth arsenite)

SHAKHUNYANTS, Georgiy Mikhaylovich, doktor tekhn. nauk; AMELIN, S.V., prof., retsenzent; KONSTANTINOV, V.N., dots., retsenzent; SMIRNOV, M.P., retsenzent; YAKOVLEV, V.F., retsenzent; BOCHENKOV, M.S., kand.tekhn. nauk, retsenzent; BROMBERG, Ye.M., retsenzent; YERSHKOV, O.P., retsenzent; ZVEREV, B.N., retsenzent; ZOLOTARSKIY, A.F., retsenzent; IVASHCHENKO. G.I.. retsenzent; LINEV, S.A., retsenzent; MARKAR'YAN,M.A., retsenzent; POPOV,V.V.,retsenzent; POPOV,S.N.,retsenzent; SEREBRENNIKOV,V.V. retsenzent; SHAFRANOVSKIY,A.K.,retsenzent; NOVITSKIY,G.I.,inzh.,retsenzent; VIKTOROV, I.I., kand.tekhn.nauk, retsenzent; VYSOTSKIY, A.F., kand.tekhn.nauk, retsenzent; SAATCHYAN, G.G., kand.tekhn.nauk, retsenzent; YAKOVLEVA, Ye.A., kand.tekhn.nauk, retsenzent; TITOV, V.P., kand.tekhn.nauk, retsenzent; GRUSHEVOY, N.G., inzh., red.; BROMBERG, Ye.M., kand.tekhn.nauk, red.; KHITROV, P.A., tekhn. red.

[Railroad tracks] Zheleznodorozhnyi put'. Moskva, Vses.izdatel'sko-poligr.ob"edinenie M-va putei soobshcheniia, 1961. 615 p.
(MIRA 14:12)

1. Kafedra "Zheleznodorozhnyy put'" Leningradskogo instituta inzhenerov zheleznodcrozhnogo transporta (for Amelin, Konstantinov, Smirnov, Yakovlev). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta (for Bochenkov, Bromberg, Yershkov, Zverev, Zolotarskiy, Ivashchenko, Linev, Markar'yan, Popov, V.V., Popov, S.N., Serebrennikov, Shafranovskiy, Novitskiy).3.Vsesoyuznyy nauchno-issledovatel'skiy institut transportnogo stroitel'stva(for Viktorov, Vysotskiy, Saatchyan, Yakovleva, Titov)
(Railroads—Track)   (Railroad engineering)

VERIGO, M.F., doktor tekhn. nauk, prof.; SEREBRENNIKOV, V.V., kand.
          tekhn. nauk

          Laboratory testing of reinforced concrete ties. Trudy TSNII
          MPS no.257:40-89 '63.

          Studies of the stress state of reinforced concrete ties.
          Ibid.: 90-107   (MIRA 16:8)

SEREBRENNIKOV, V.V., kand. tekhn. nauk

Effect of the form of the lower surface of a reinforced
concrete tie on the resistance to shear on the ballast.
Trudy TSNII MPS no.257:108-113 '63.   (MIRA 16:8)

SEREBRENNIKOV, V.V., kand. tekhn. nauk; MIKHAYLOVA, V.P., inzh.

Effect of errors in manufacturing wire-reinforced concrete
ties on their stability characteristics. Trud₩ TSNII MPS
no.257:114-122 '63.

Study of wire-reinforced concrete ties manufactured on
assembly lines at plants working according to different
engineering systems. Ibid.: 123-135   (MIRA 16:8)

GORELOV, I.P.; SEREBRENNIKOV, V.V.

Determination of the thermodynamic characteristics of the formation of polyiodides based on optical data. Zhur.fiz.khim. 37 no.10:2322-2324 O '63.   (MIRA 17:2)

1. Tomskiy gosudarstvennyy universitet imeni V.V.Kuybysheva.

SEREBRENNIK, Yu. R.

PERFIL'YEV, G.L.; SEREBRENNIK, Yu. R.

Automatizing the control of the dimensions of parts during
the maching process on universal lathes. [Izd.] LONITOMASH
24:53-62 '51.   (MIRA 8:2)

1. Ural'skiy politekhnicheskiy institut.
      (Lathes)

SEREBRENNIK Yu.B.

KUVSHINSKIY, V.V., kandidat tekhnicheskikh nauk; SEREBRENNIK, Yu.B.,
kandidat tekhnicheskikh nauk; SOLONIN, I.S., kandidat
tekhnicheskikh nauk; SHARIN, Yu.S., kandidat tekhnicheskikh
nauk.

Surface formation and force relationships in large-feed
semifinish grinding. Trudy Ural.politekh.inst. no.63:21-36
'56.   (MLRA 10:2)

    (Surfaces (Technology)) (Grinding and polishing)

21(8)

AUTHOR: Serebrennikov, Yu.I.   SOV/56-35-3-38/61

TITLE: On the Possibility of Estimating the Average Life of α-Substruc-
            tures in the Interior of Nuclei (O vozmozhnosti otsenki srednego
            vremeni zhizni α-podstruktur vnutri yader)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35,
            Nr 3, pp 789 - 791 (USSR)

ABSTRACT: Reference is first made to several earlier papers dealing with
            this subject. According to J.Combe (Komb) (Ref 4) the life of
            substructures inside the nucleus is probably of the order of
            10^{-22} sec. If this is the case there is a possibility of esti-
            mating these substructures experimentally. The author here
            describes the knocking-out (vybivaniye) of α-substructures from
            the nuclei. In the case of stable substructures, the spectrum of
            the α-particles produced by the process of knocking-out is de-
            scribed by the expression $N(E) - f(E)P(E)$. Here $f(E)$ denotes the
            function of the distribution of the α-substructures within the
            nucleus over the energies, E, $P(E)$ denotes the penetrability of
            the Coulomb (Kulon) barrier of the nucleus for α-particles. In
Card 1/3   the case of non-stable substructures (which have an average life

On the Possibility of Estimating the Average Life   SOV/56-35-3-38/61
of α-Substructures in the Interior of Nuclei

of $\tau_\alpha \sim 10^{-22}$ sec in the interior of the nucleus), a factor occurs in the expression for $N(E)$, which takes the annihilation of α-substructures during their motion inside the nucleus into account. The energy spectrum of the α-particles produced by knocking-out is explicitly written down for the case in which the dependence on time of the annihilation of the substructures in the interior of the nucleus is described by the exponential function $N = N_0 \exp(-t_{eff}/\tau_\alpha)$. Here $t_{eff} = l/v$ denotes the duration of the motion of the α-substructure, which at the point of collision assumed the velocity v in the direction of the shortest distance l from the surface of the nucleus. The spectrum of the α-particles produced by knocking-out has the form

$$N(E) = f(E)P(E)\exp\left\{ -\left[m_\alpha/2(E + U)\right]^{1/2} l/\tau_\alpha \right\}.$$ m_α denotes the mass

of the α-particle and U the depth of the potential well of the nucleus for an α-particle. Next, the exponent of this exponential function for $\tau_\alpha = 1.10^{-22}$ sec is estimated for such an energy E as

Card 2/3   is equal to the energy of the Coulomb barrier $U_{Coulomb}$ for nuclei

On the Possibility of Estimating the Average Life   SOV/56-35-3-38/61
of α-Substructures in the Interior of Nuclei

with known U. For C^{12} the value 1,2 is obtained for this exponent, and for Ag the value -0,8. There are 6 references, 1 of which is Soviet.

ASSOCIATION: Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute)

SUBMITTED: May 21, 1958

Card 3/3

SEREBRENNIKOV, Yu. I.: Master Phys-Math Sci (diss) -- "The interaction of pro-

tons with energy of 660 MEV with light nuclei (C, N, and O)". Leningrad, 1959.

9 pp (Min Higher Educ USSR, Leningrad Polytech Inst im M. I. Kalinin), 150 copies

(KL, No 14, 1959, 118)

83348

S/139/60/000/004/004/033

E032/E514

2446520

AUTHOR: Serebrennikov, Yu. I.   19

TITLE: Estimate of the Mean Lifetime of α-Substructures in Nuclei

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No.4, pp.51-55

TEXT: An attempt is made to estimate the mean lifetime of α-substructures inside light nuclei (C, N and O). Analysis of nuclear emulsion data obtained by the authors using 660 MeV protons shows that the mean lifetime of α-substructures inside light nuclei lies between 4×10^{-23} sec and 5×10^{-22} sec. This estimate is in agreement with the value of τ_α reported by Combe in Ref.4 and suggests that α-substructures can only be looked upon as transient quasi-particles. However, their lifetime is sufficiently long for collisions to take place between them and incident nucleons. Acknowledgment is made to Professor N. A. Perfilov and Docent V. I. Ostroumov for valuable suggestions. There are 2 figures and 19 references: 5 Soviet, 6 French and 8 English.

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S/139/60/000/004/004/033
E032/E514

Estimate of the Mean Lifetime of α-Substructures in Nuclei

ASSOCIATION: Leningradskiy politekhnicheskiy institut imeni
M. I. Kalinina (Leningrad Polytechnical Institute
imeni M. I. Kalinin)

SUBMITTED: July 13, 1959

Card 2/2

SEREBRENNIKOV, Yu.I.

Graphic method for scaling particle energy from the laboratory
coordinate system to a moving system. Prib. i tekh. eksp. 6
no.2:172-173 Mr-Ap '61. (MIRA 14:9)

1. Leningradskiy politekhnicheskiy institut.
(Particles (Nuclear physics))

S/056/61/040/002/002/047
B113/B214

AUTHORS: Perfilov, N. A., Serebrennikov, Yu. I.

TITLE: Interaction of 660-Mev protons with carbon, nitrogen, and
             oxygen nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
             no. 2, 1961, 400-408

TEXT: In order to make precise the disintegration mechanism, a more
exact experimental study is carried out of the disintegrations of C, N,
and O nuclei by high-energy protons $(E > 500$ Mev). The nuclear disintegra-
tions were detected by means of three-layer photographic plates having a
gelatin layer (2μ) between two layers of the emulsion П-9 (P-9) each
100μ thick. The emulsion P-9 was sensitive to protons with energy
$E_p < 30$ Mev and in it only charged particles with black traces were
recorded. The emulsion and the plates were prepared in the laboratory of
Professor N. A. Perfilov at the Radium Institute, AS USSR. The photo-
graphic plates were irradiated by 660-Mev protons in the synchrotron of
the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of
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Interaction of 660-Mev protons...

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Nuclear Research), the proton beam being parallel to the surface of the emulsion. The kinetic energy, E, of the charged particles at the end of their path in the gelatin and the emulsion was determined from the relation $E = E(R_1) + 0.6[E(R_1 + R_2) - E(R_1)]$ (1), where R_1 and R_2 are the ranges in the emulsion and the gelatin layer, respectively, and $E(R)$ is the energy of the particle corresponding to the range R in the emulsion. A total of 1044 disintegrations of C. N, and O nuclei were recorded. The mean number of black rays per star amounted to 3.25, of which 1.94 were attributed to alpha particles and 1.29 to protons, the ratio α/p being 1.5. On account of the limited sensitivty of the photographic plate in this experiment about 0.75 of the fast protons ($E_p > 30$ Mev) in each

disintegration were not detected. If all the particles originate from a nuclear disintegration and fly with the mean velocity v in the direction of the proton beam, v is proportional to the forward-to-backward ratio of the energy spectrum and to the angular distribution of the particles in the laboratory system. From the experimental values, the distribution curves of the alpha particles and the protons were calculated on the assumption that the angular distributions in the center-of-mass system of

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Interaction of 660-Mev protons....

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the residual nucleus are isotropic. Comparison of the angular
distributions of alpha particles for different energies showed that they
are practically coincident for all $E_\alpha \leqslant 8$ Mev. A similar correlation for
protons is not so clearly seen. The energy and angular distributions of
the particles were also considered for a coordinate system moving with
the velocity $v = 3.5 \cdot 10^8$ cm/sec in the direction of the proton beam. It
was found here that the angular distribution of the alpha particles was
coincident with the isotropic distributions. The experimental results
in the center-of-mass system of the primary nucleus show that the
majority of the events of disintegration of C, N, and O nuclei by 660-Mev
protons take place in two stages according to Serber (Phys.Rev. 72,
1114, 1947). It was observed that the ejected protons could have small
energies up to 1.5 Mev. The ejected alpha particles had energies
$E \geqslant 8$ Mev. From a knowledge of the numbers of the ejected particles, the
mean values of the charge $\bar{Z}$ and the mass number $\bar{A}$ of the residual
nucleus can be calculated: $\bar{Z} = Z_o - (n_p + 2n_\alpha) = 5.2;$ $A = \bar{A}_o - (n_p + n_n + 4n_\alpha)$
$= 10.4.$ Here, the mean number, n_n, of promptly ejected neutrons per

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Interaction of 660 Mev protons...

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disintegration event is equal to the number of promptly ejected protons (n_p); $n_n = n_p - 1.03$; $n_\alpha - 0.2$. The excitation energy of the residual nucleus can also be determined if the number of emitted particles and their mean kinetic energy in the center-of-mass system of the residual nucleus are known. The mean lifetime of the alpha particles in the nucleus was found to be $\tau_\alpha \approx 4 \cdot 10^{-23}$ sec. V. I. Ostroumov is thanked for discussions of several questions concerning this paper. Ye.L.Grigor'yev, G. A. Leksin, and B. S. Neganov, assistants at the Joint Institute of Nuclear Research, are thanked for their help in conducting the experiment at the synchrotron of the Institute. There are 7 figures and 16 references: 5 Soviet-bloc and 11 non-Soviet-bloc.

ASSOCIATION: Radiyevyy institut Akademii nauk SSSR (Radium Institute of
the Academy of Sciences USSR)

SUBMITTED: June 28, 1960

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40637

S/139/62/000/004/013/018
E032/E514

24.6460

AUTHOR: Serebrennikov, Yu.I.

TITLE: On an experimental estimate of the mean half-life of
             α-particles in nuclei

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no.4,
             1962, 151-153

TEXT: In a previous paper (Izv. vuzov SSSR, Fizika, no.4, 51,
1960) a relation was derived for the number of "ejected" particles
N(E) and the lifetime τ_α of α-particles inside nuclei. However,
that expression holds only for a square-well potential, whereas
the actual nuclear potential falls off much more slowly, giving
rise to a reduction in the velocity of α-particles leaving the
nucleus and therefore a shortening of the α-particle lifetime.
In the present paper the more general expression

$$N(E) = f(E)P(E) \exp\left[-t(E)/\tau_\alpha\right]$$ (2)

is employed, where f(E) is the energy distribution of recoil
α-particles inside the nucleus, P(E) is the "transmissivity" of the
Coulomb barrier for α-particles and t(E) is the time spent by the
α-particle within the nucleus. In estimating t(E) use is made of
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On an experimental estimate ...   S/139/62/000/004/013/018
E032/E514

a combination of the real Woods-Saxon potential and the Coulomb potential with V_0 = 40 MeV, a = $0.65 \cdot 10^{-13}$ and R = $1.23 \cdot 10^{-13}$ $A^{1/3}$.
In integrating the equation of motion for the α-particle inside the nucleus it is assumed that it moves from the surface layer in the outward direction, the radial limits of integration being the distance at which the nucleon density (or the nuclear potential) begins to fall off rapidly so that the probability of production of "internal" α-particles is a maximum, and the distance corresponding to the maximum of the Coulomb barrier. In the case of N^{14}, for example, these two distances are $1.7 \cdot 10^{-13}$ and $6.6 \cdot 10^{-13}$, respectively. Using these assumptions an expression is derived for t(E). Comparison with experimental results is then used to show that this formula yields acceptable values for τ_{α}.

ASSOCIATION: Leningradskiy politekhnicheskiy institut imeni
M. I. Kalinina
(Leningrad Polytechnic Institute imeni M.I.Kalinin)

SUBMITTED: May 29, 1961

Card 2/2

SEREBRENNIKOV, Yu.I.

Diagrams for calculating elastic particle collisions. Prib. i tekh. eksp.
8 no.2:169-171 Mr-Ap '63.   (MIRA 16:4)

1. Leningradskiy politekhnicheskiy institut.
                    (Collisions (Nuclear physics))

SEREBRYAKOV, Yu.M., inzh.

Small cruising yacht "Amethyst." Sudostroenie 26 no.8:43-47 Ag
'60.   (MIRA 13:10)
                        (Boatbuilding)

GLAZKOV, Yu.Yu.; GERASEVA, L.A.; DUBOVSKIY, B.G.; KRASIN, A.K.; KISIL',
    I.M.; KUZNETSOV, F.M.; SEREBRENNIKOV, Yu.M.; SHELUD'KO, V.P.;
    SHARAPOV, V.N.; PEN FAN

Study of the physical characteristics of the lattice of a
uranium-graphite reactor with the aid of a subcritical insert.
Atom. energ. 11 no.1:5-11 Jl '61.   (MIRA 14:7)
                    (Nuclear reactors)

KONSTANTINOV, L.V.; RESHETIN, L.V.; SEREBRENNIKOV, Yu.M.

Small-sized fission chamber. Prib. i tekh. eksp. 7 no.2:171-172 Mr-Ap '62.   (MIRA 15:5)

(Nuclear fission)

L 1165-66   EWT(m)/EPF(c)/EPF(n)-2/EWP(t)/EWP(b)/EWF(h)   DIAAP/IJP(c)
JD/WW/JG

ACCESSION NR: AT5023151   UR/2892/65/000/004/0073/0077

AUTHOR: Konstantinov, L. V.; Serebrennikov, Yu. M.

TITLE: Use of a fission chamber for studying the shielding properties of materi-
als

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Voprosy dozimetrii i zashchi-
ty ot izlucheniy, no. 4, 1965, 73-77

TOPIC TAGS: nuclear shielding, nuclear fission, thermal neutron, fast neutron,
neutron shielding, neutron flux, uranium, plutonium, neptunium, thorium

ABSTRACT: Fission chambers are ionization with the difference that there is
applied to the electrodes or one of the electrodes a layer of material capable of
fission under the action of thermal or fast neutrons. The most common fissiona-
ble materials used are U^{233}, U^{235}, Pu^{239}, Np^{237}, Th^{232}, and U^{238}. The article
describes the construction details of such chambers using schematic figures. The
sensitivity of a fission chamber is determined by the amount of fissionable mater-
ial and the thickness of the layer applied. Special chambers have been developed
for measurement of neutron flux at points where the temperature reaches 800-

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ACCESSION NR: AT5023151

900 C. The main factors determining the characteristics of the chamber are the dimensions and material of the electrodes, the thickness of the fissionable layer, the construction and material of the insulators, the gas filling the chamber, its pressure, and other construction features. The gases generally used are argon, nitrogen, carbon dioxide, xenon, krypton, or a mixture thereof. The pressure in the chamber can range from a few millimeters of mercury to tens of atmospheres. With respect to sensitivity, the chambers can be divided into three groups: high sensitivity impulse chambers for measurement of neutron fluxes from $1-10^5$ neutrons/cm^2-sec; average sensitivity chambers for neutron fluxes from 10^5-10^{10} neutrons/cm^2-sec; and, low sensitivity current chambers for neutron fluxes from $10^{10}-10^{13}$ neutrons/cm^2-sec. The high sensitivity chambers have a large working surface and can hold up to 1 gram of fissionable material. A metallic spiral ribbon with the fissionable material is used in these chambers. The latest improved models of these fission chambers permit measurement of the neutron flux at points of the reactor at which measurements can not be made by other methods due to high neutron fluxes and gamma quanta or to high temperatures. Orig. art. has: 2 figures and 2 tables

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L 1165-66

ACCESSION NR: AT5023151

ASSOCIATION: None

SUBMITTED: 00   ENCL: 00   SUB CODE: NP

NR REF SOV: 003   OTHER: 007

Card 3/3

PHASE I BOOK EXPLOITATION   SOV/4064

Serebrennikov, Yuriy Nikolayevich, Engineer, Lt. Colonel

Detali mashin; uchebnik dlya aviatsionnykh spetsialistov (Machine
    Parts; Textbook for Aviation Specialists) Moscow, Voyenizdat,
    1960. 216 p. No. of copies printed not given.

Ed.: G.I. Kalashnik, Engineer, Lt. Colonel; Tech. Ed.: G.F.
    Sokolova.

PURPOSE: This textbook is intended for cadets and students at
    aviation and other technical schools and tekhnikums. It may be
    useful to technicians and junior specialists in all branches
    of the armed forces, technicians and junior specialists working
    in industry, students in grades 8 to 11 for technical training,
    and to persons interested in aviation.

COVERAGE: The textbook discusses the basic concepts of tolerances
    and fits, riveted, welded, threaded, and keyed assemblies, trans-
    mission parts, and gears. It sets forth the bases of calculation

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